

# Motorhome Leveling Basics

## On a known level surface, check motorhome level calibration:

1. If equipped, Dump air suspension and verify coach settles evenly.
2. Auto-Level
3. Verify the floor is level with a pair of *verified*\* beam spirit levels, 4 four foot or longer fore and aft and three foot or longer side to side.  

\* Level verification: place the level on a flat surface and note any bubble offset. Rotate the level 180° and verify the bubble offset is identical in the rotated position.
4. If the coach floor is not level, manually adjust the leveling system and re-calibrate. It's in the Manual.
5. Affix a circular bubble level in a LEVEL inconspicuous location on a horizontal surface in the coach proper, NOT a slide. This will allow a check before leveling, monitor leveling system temperature compensation performance and give early warning of calibration drift or other issues. Rolling a can on a counter is not accurate.



A circular bubble level offers a simple and immediate indication of the slope and whether blocks may be required for correction.

If the bubble level has cross-hairs, mount so they are square to the chassis as then the bubble moves with the corresponding level control buttons. Up moves the bubble toward the control.

Many use a mobile phone app for leveling. However these are neither sensitive enough nor always accurate, especially if not calibrated and continually verified.

## Wheelbase Tilt / Lift

	96" Lateral	200"	225"	250"	265"
0.5°	0.84	1.75	1.96	2.18	2.31
1.0°	1.68	3.49	3.93	4.36	4.62
1.5°	2.51	5.23	5.89	6.54	6.94
2.0°	3.35	6.98	7.85	8.72	9.25
2.5°	4.19	8.72	9.81	10.90	11.56

If the site slopes both fore and aft and laterally, the total correction is the sum of Lateral and Wheelbase.

From the above, it's quite clear that even a minor grade may lift the wheels off the ground, depending on available travel. Remember: Wheels & suspension support, Jacks stabilize.

It's important to know available suspension travel, the drop / lift available front and rear and the available lift before the wheels come off the ground. Knowing these values allows you to decide before leveling if blocks are required... and where.

If possible, drop the air suspension after measuring the ride height from the ground to wheel well top center. Both ends of the coach should lower. Note fore & aft drop. Now auto-level the coach. The low end only should raise.

Consider what happens when the jacks come down on an irregular, off-level surface and the wheels lift:

1. First jack contacts and begins to grip.
2. Other jacks contacts an area most likely at a different height, slope and texture, creating a torque between jacks.
3. Continued lift removes wheel contact with ground.
4. The coach shifts slightly as the wheels lose contact with the ground.
5. Reversing the process, the wheels contact the ground in a different location, inducing torque on the jacks as the suspension shifts the coach.
6. When the pressures on the jack feet are sufficiently reduced, the jacks will jump to relieve the induced torques.

The larger the coach the more severe the torque. A neighbor went through three sets of jacks in six months on a 2020 Newmar Dutch Star 40 relying solely on jacks to level his rig.

The jack footprint is considerably smaller than wheelbase and track, inducing quite different stresses on the coach and chassis. A coach raised on jacks along has a narrower footprint and a longer lever arm, increasing bending torque on the jack.

Wind force increases as the square of the velocity. In gusting conditions, wind gust side load increases rapidly. The load on the windward jacks decreases whilst the leeward increases, possibly beyond design load. Regardless, additional torque maybe applied to the leeward jack.

The solution: Raise the coach wheels on blocks and provide jack supports to minimize chassis and coach stresses in very off level sites.

It may be preferred to reverse onto ramps in a pull through site after disconnecting a towed vehicle. This will allow drive off with toad attached for an easier exit. The blocks and ramps can be quickly picked up and stowed.

Excellent thread: [\*\*IRV2 AUTO LEVELING VS MANUAL LEVELING\*\*](#)

Informational ONLY. Author assumes Zero Responsibility. **User assumes all Risk and Responsibility**

***!!! Always ensure tires are centered on Leveling Blocks  
and  
Jack Pads are well centered beneath the jack foot !!!***

Block Notes:

- ◆ Ensure blocks are in line with tires and parallel to vehicle center line.
- ◆ “B-A” is used to set one block farther away from the wheel when terrain is very off-level.
- ◆ “Dually” Spacer: Length is distance between dual drive wheels measured from outside to outside of each tire.
- ◆ Optional “A” single layer are handy when only the front or a single rear dually needs a little lift. Much lighter than the dual layer A+B block.
- ◆ Vehicles that use jacks alone for leveling may chew up the jack pads if the jacks have ‘bumpy’ feet.

Positioning Hook:

- ◆ Cover the hook open end with a vinyl cap. It can then be used to pull out folded slide gaskets without damaging the paintwork.
- ◆ Length about 3 to 4 feet.

***!!! The REAR wheels MUST remain on the Ground !!!***

